

CLAIMS

1. A hydrocarbon sensor and collector, said sensor and collector comprising:

an element capable of releasably absorbing hydrocarbons positioned in the air intake system of an engine, said carbon element being positioned upstream from said engine, so as to be wholly in the airflow;

said element having a plurality of chambers defined therein, said chambers arranged so as to allow air to pass through said element; and

said element having a means for detecting the level of hydrocarbons absorbed by said element.

2. The hydrocarbon sensor and collector of claim 1, further comprising a means for determining the level of hydrocarbons absorbed by said element based on information from said detecting means.

3. The hydrocarbon sensor and collector of claim 2, wherein said means for detecting the level of hydrocarbons absorbed by said element is a plurality of wires connected to a diagnostic system.

4. The hydrocarbon sensor and collector of claim 3, wherein said wires are attached to said element with a conductive epoxy.

5. The hydrocarbon sensor and collector of claim 3, wherein said wires are molded to said element.

6. The hydrocarbon sensor and collector of claim 5, wherein said chambers are octagonal and arranged in a honeycomb pattern.

7. The hydrocarbon sensor and collector of claim 5, wherein said chambers are circular.

8. The hydrocarbon sensor and collector of claim 5, wherein said chambers are square.

9. The hydrocarbon sensor and collector of claim 8, wherein said element absorbs hydrocarbons when said engine is not operating.

10. The hydrocarbon sensor and collector of claim 9, wherein said element releases hydrocarbons when said engine is operating.

11. The hydrocarbon sensor and collector of claim 10, wherein said hydrocarbons are released as a result of the increased air flow present in said air intake system when said engine is operating.

12. The hydrocarbon sensor and collector of claim 11, wherein said element is formed from carbon mixed with a binder material.

13. The hydrocarbon sensor and collector of claim 12, wherein said binder material is gray clay.

14. The hydrocarbon sensor and collector of claim 12, wherein said binder material is ceramic.

15. The hydrocarbon sensor and collector of claim 11, wherein said element is formed from carbon.

16. The hydrocarbon sensor and collector of claim 15, wherein said circuit is a wheat stone bridge circuit.

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17. A hydrocarbon sensor and collector, said sensor and collector comprising:

5 an element capable of absorbing and releasing hydrocarbons, said element having a plurality of chambers defined therein to allow air to pass through said element and said element positioned in the air intake flow of an engine such that all air entering said engine passes through said element; and

a circuit in communication with said element capable of measuring the level of hydrocarbons absorbed by said element.

18. The hydrocarbon sensor and collector of claim 17, wherein said element is a carbon element.

19. The hydrocarbon sensor and collector of claim 18, wherein said circuit includes a wheat stone bridge.

20. The hydrocarbon sensor and collector of claim 19, wherein said circuit includes a microprocessor.

15 21. The hydrocarbon sensor and collector of claim 20, wherein said circuit is integrated with the on-board computer of the vehicle.

22. The hydrocarbon sensor and collector of claim 21, wherein said carbon element absorbs hydrocarbons when an evaporative airflow passes through said carbon element.

20 23. The hydrocarbon sensor and collector of claim 22, wherein said carbon element releases hydrocarbons when a moderate to high airflow passes through said carbon element.

24. A method for releasably absorbing hydrocarbons and measuring the level of hydrocarbons in an engine air intake, said method comprising the steps of:

positioning a hydrocarbon absorbing element in the air intake upstream from the engine; and

conductively connecting said element to a circuit capable of measuring the level of hydrocarbons in the air intake.

25. The method of claim 24, further comprising the step of absorbing hydrocarbons into said element when said engine is not operating.

26. The method of claim 25, further comprising the step of releasing said absorbed hydrocarbons when said engine is operating.

27. The method of claim 26, wherein the step of measuring the level of hydrocarbons in the air intake is performed by measuring the change in resistance of said element.

28. The method of claim 27, further comprising the step of defining chambers in said element.

29. The method of claim 28, wherein said chambers condition said airflow by straightening the flow of air through said element.

30. The method of claim 29, wherein the step of conditioning the airflow is performed by adjusting the size and shape of said chambers and the thickness of said element.